

Appl. No.: 10/674,956

Amdt. Dated August 19, 2005

Response to Office Action Mailed May 19, 2005

## AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in this application.

1. (Currently Amended) An optical wave guide element having a substrate which has electro-optic effect and an optical wave guide formed on the substrate, comprising:

a reflective means formed on a side of the substrate where an incoming end of the optical wave guide is positioned; and

an input optical fiber connected directly to the substrate which is placed apart from the optical wave guide,

wherein a light waves ~~wave~~ that propagate between exiting from the input optical fiber propagates the reflective means and the optical fiber propagate within the substrate excluding the optical wave guide and is reflected from the reflective means to enter the optical wave guide,

and an angle formed between an output direction of the light wave from the input optical fiber and an input direction of the light wave to the optical wave guide is set at approximately 90°.

2. (Currently Amended) ~~The~~ An optical wave guide element ~~according to Claim 1,~~  
~~wherein the~~ having a substrate which has electro-optic effect and an optical wave guide formed on  
the substrate, comprising:

a reflective means formed on a side of the substrate where an outgoing end of the optical  
wave guide is positioned; and

an output optical fiber is connected directly to a side of the substrate where the reflective  
means is not formed, or to a bottom surface of the substrate which is placed apart from the optical  
wave guide,

wherein a light wave exiting from the optical wave guide is reflected from the reflective  
means and propagates within the substrate excluding the optical wave guide to enter the output  
optical fiber,

and an angle formed between an output direction of the light wave from the optical  
wave guide and an input direction of the light wave to the output optical fiber is set at approximately  
90°.

3. (Previously Presented) The optical wave guide element according to Claim 1,  
wherein the propagation distance of light waves that propagate inside the substrate excluding the  
optical wave guide, is 200  $\mu\text{m}$  or less.

4. (Previously Presented) The optical wave guide element according to Claim 1,  
wherein an angle formed between a normal direction of the reflective means and an optical axis of  
the optical wave guide that makes contact with the reflective means is no smaller than an angle of  
total reflection of light waves that are transmitted through the optical wave guide.

5. (Previously Presented) The optical wave guide element according to Claim 1,  
wherein the reflective means comprises a reflective film.

6. (Currently Amended) The optical wave guide element according to Claim 1, wherein the ~~reflective means separates light waves transmitted from the optical wave guide side into transmitted light and reflected light so that the transmitted light is made to enter a light receiving element provided outside the substrate~~ input optical fiber is connected to a side of the substrate where the reflective means is not formed, or to a bottom surface of the substrate.

7. (Currently Amended) ~~A method of manufacture of the~~ The optical wave guide element according to Claim ~~2, 1,~~ comprising the step of determining a position where the substrate and the optical fiber are connected while the light intensity of the light waves that propagate through the substrate ~~excluding the optical wave guide is being detected~~ wherein the output optical fiber is connected to a side of the substrate where the reflective means is not formed, or to a bottom surface of the substrate.

8. (Previously Presented) The optical wave guide element according to Claim 2, wherein the propagation distance of light waves that propagate inside the substrate excluding the optical wave guide, is 200  $\mu\text{m}$  or less.

9. (Previously Presented) The optical wave guide element according to Claim 2, wherein an angle formed between a normal direction of the reflective means and an optical axis of the optical wave guide that makes contact with the reflective means is no smaller than an angle of total reflection of light waves that are transmitted through the optical wave guide.

10. (Currently Amended) The optical wave guide element according to ~~Claim 3, Claim 6,~~ wherein an angle formed between a normal direction of the reflective means and an optical axis of the optical wave guide that makes contact with the reflective means is no smaller than an angle of total reflection of light waves that are transmitted through the optical wave guide.

11. (Previously Presented) The optical wave guide element according to Claim 2, wherein the reflective means comprises a reflective film.

12. (Currently Amended) The optical wave guide element according to ~~Claim 3~~, Claim 6, wherein the reflective means comprises a reflective film.

13. (Currently Amended) The optical wave guide element according to ~~Claim 4~~, Claim 7, wherein the reflective means comprises a reflective film.

14. (Previously Presented) The optical wave guide element according to Claim 2, wherein the reflective means separates light waves transmitted from the optical wave guide side into transmitted light and reflected light so that the transmitted light is made to enter a light receiving element provided outside the substrate.

15. (Currently Amended) The optical wave guide element according to ~~Claim 3~~, Claim 7, wherein the reflective means separates light waves transmitted from the optical wave guide side into transmitted light and reflected light so that the transmitted light is made to enter a light receiving element provided outside the substrate.

16-20. (Cancelled).

21. (New) The optical wave guide element according to Claim 6, wherein the propagation distance of light waves that propagate inside the substrate excluding the optical wave guide, is 200  $\mu\text{m}$  or less.

22. (New) The optical wave guide element according to Claim 7, wherein the propagation distance of light waves that propagate inside the substrate excluding the optical wave guide, is 200  $\mu\text{m}$  or less.

23. (New) The optical wave guide element according to Claim 7, wherein an angle formed between a normal direction of the reflective means and an optical axis of the optical wave guide that makes contact with the reflective means is no smaller than an angle of total reflection of light waves that are transmitted through the optical wave guide.

24. (New) A method of manufacture of an optical wave guide element having a substrate which has electro-optic effect, an optical wave guide formed on the substrate, a reflective means formed on a side of the substrate where an incoming end of the optical wave guide is positioned, and an input optical fiber connected directly to the substrate which is placed apart from the optical wave guide, wherein

a light wave exiting from the input optical fiber propagates within the substrate excluding the optical wave guide and is reflected from the reflective means to enter the optical wave guide, and an angle formed between an output direction of the light wave from the optical fiber and an input direction of the light wave to the optical wave guide is set at approximately  $90^\circ$ , comprising the step of:

determining a position where the substrate and the input optical fiber are connected, while the light wave is exiting from the input optical fiber and the light intensity of the light wave that enters the optical waveguide is being detected.

25. (New) A method of manufacture of an optical wave guide element having a substrate which has electro-optic effect, an optical wave guide formed on the substrate, a reflective means formed on a side of the substrate where an outgoing end of the optical wave guide is positioned, and an output optical fiber connected directly to the substrate which is placed apart from the optical wave guide, wherein

a light wave exiting from the optical wave guide is reflected from the reflective means and propagates within the substrate excluding the optical wave guide to enter the output optical fiber, and an angle formed between an output direction of the light wave from the optical wave guide and an input direction of the light wave to the optical fiber is set at approximately  $90^\circ$ , comprising the step of:

determining a position where the substrate and the output optical fiber are connected, while the light wave is exiting from the optical wave guide and the light intensity of the light wave that enters the output optical fiber is being detected.